

REMARKS

I. Status Summary

Claims 1-14 are pending in the present application. Claims 1-4, 13, and 14 presently stand rejected. Claims 1, 3, 4, 13, and 14 have been amended. Upon entry of this Amendment, claims 1-14 will be pending.

II. Claim Rejection Under 35 U.S.C. § 103

Claims 1-3, 13, and 14 stand rejected by the Examiner under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 2007/0188187 to Oliva et al. (hereinafter, "Oliva") in view of U.S. Patent No. 6,731,106 to Whetsel (hereinafter, "Whetsel"). Further, Claim 4 stands rejected by the Examiner under 35 U.S.C. § 103(a) as being unpatentable over Oliva and Whetsel in view of U.S. Patent No. 7,245,144 to Wong et al. (hereinafter, "Wong"). These rejections are respectfully traversed.

Claim 1 as amended recites a test switching circuit for a high-speed data interface of an integrated circuit comprising a plurality of switching transistors. The switching transistors switch in a test mode an integrated termination resistor output stage coupled to an output pad of the integrated circuit in the data transmission signal path to an integrated termination resistor input stage coupled to an input pad of the integrated circuit in a data reception path. The plurality of switching transistors provide for a plurality of internal test signal paths between the input pad and the output pad. Likewise, claims 13 and 14 have been amended to recite similar

features. It is respectfully submitted that none of Oliva, Whetsel, or Wong, either alone or in combination, teach a test switching circuit having these features.

First, as indicated above, claims 1, 13, and 14 have been amended to more particularly recite a plurality of switching transistors providing for a plurality of internal test signal paths between the input pad and the output pad. Although the Examiner contends that Oliva discloses switching transistors, Figures 5 and 8 of Oliva only depict a single switching transistor **504**. In addition, Figures 5 and 8 of Oliva show a single pad through which a programmable resistance element **506** is internally coupled. Likewise, Oliva fails to disclose a pair of pads (i.e., an output pad and an input pad) to which integrated termination resistor output stages and integrated termination resistor input stages are coupled internally. Oliva discloses an individual programmable resistance element **506** or **802**.

In addition, whereas claims 1, 13, and 14 as amended particularly recite an integrated termination resistor, Oliva discloses an individual reference resistor **514** that is shown separate from the circuit arrangement and indicated by the dotted line "chip boundary". The external nature of reference resistor **514** is also clearly stated in the specification of Oliva. (See, e.g., paragraphs [0040] and [0041]) As a result, it is respectfully submitted that the external resistor element **514** disclosed by Oliva cannot be identified with a termination resistor input stage as recited in amended claims 1, 13, and 14.

Consequently, a person skilled in the art would not depart from the teachings of Oliva to arrive at the subject matter of amended claims 1, 13, or 14. As noted

above, for example, the circuitry disclosed in Oliva does not consider a plurality of internal test signal paths between an input pad and an output pad. In fact, Oliva considers an individual impedance matching circuit that is connected to one pad of an integrated circuit. Even if integrated circuits having more than one pad were taught, applying the teaching of Oliva to a plurality of pads would result in an integrated circuit wherein each pad is coupled to an individual impedance matching circuit. Accordingly, an internal coupling between pads and thereby the provision of internal test signal paths between different pads would not be achieved.

The addition of the teachings of Whetsel and Wong do not remedy the many deficiencies of Oliva. For instance, even if the teachings of Oliva and Whetsel were combined, the combination would not lead to the claimed test switching circuit according to amended claim 1, a high-speed data interface according to amended claim 13 or an integrated circuit according to amended claim 14. Whetsel teaches to use an external test apparatus, in particular, for memory circuits. Whetsel does not show any input pads and output pads that can be internally connected thereby forming a plurality of internal test signal paths in an integrated circuit. The combined teaching of Oliva and Whetsel therefore does not provide sufficient disclosure to arrive at the claimed subject matter.

Further, the disclosure of Wong teaches a person skilled in the art to implement impedance matching individually for each terminal for a differential driver circuitry in differential communication links. In particular, the disclosure of Wong is not directed at any internal test signal paths between the output pads. (See, e.g., col.

12, lines 18-27) Rather, Wong primarily addresses the teaching of Oliva regarding impedance matching of single terminals to the impedance of connected loads.

For at least the reasons set forth above, it is respectfully submitted that Oliva, either alone or in combination with one or both of Whetsel and Wong, fails to teach or suggest each and every feature recited in claims 1, 13, and 14. It is therefore respectfully requested that the rejections of claims 1, 13, and 14 under 35 U.S.C. § 103(a) be withdrawn and the claims allowed at this time.

In addition, claims 2-4 depend from claim 1. Accordingly, it is respectfully submitted that the remarks presented above relating to claim 1 apply equally to these claims. As a result, it is respectfully requested that the rejections of claims 2-4 should likewise be withdrawn and the claims allowed at this time.

CONCLUSION

In light of the above Amendments and Remarks, it is respectfully submitted that the present application is now in proper condition for allowance, and an early notice to such effect is earnestly solicited.

If any small matter should remain outstanding after the Patent Examiner has had an opportunity to review the above Remarks, the Patent Examiner is respectfully requested to telephone the undersigned patent attorney in order to resolve these matters and avoid the issuance of another Official Action.

Serial No.: 10/788,545

DEPOSIT ACCOUNT

The Commissioner is hereby authorized to charge any fees associated with the filing of this correspondence to Deposit Account No. 50-0426.

Respectfully submitted,

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